

REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1-4 and 13-14 were examined on the merits. Claims 5-12 and 15-20 were withdrawn from consideration by the Examiner as directed to non-elected inventions. Their rejoinder is requested after allowance of the elected claims.

The amendments are fully supported by the original disclosure and, thus, no new matter is added by their entry. They delete the recitation of SEQ ID NO: 11, which is conserved among this family of wheat storage proteins but not found identically therein.

Specification/Claim Objections

The title and abstract are amended to address the Examiner's objections.

Applicant requests withdrawal of the objections.

35 U.S.C. 112 – Written Description

The specification must convey with reasonable clarity to persons skilled in the art that applicant was in possession of the claimed invention as of the filing date sought. See *Vas-Cath v. Mahurkar*, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). But the Patent Office has the initial burden of presenting evidence or a reason why persons of ordinary skill in the art would not have recognized such a description of the claimed invention in the original disclosure. See *In re Gosteli*, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

Claims 1-4 and 13-14 were rejected under Section 112, first paragraph, as allegedly failing to comply with the written description requirement. It was further alleged, "The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." Applicant traverses because cancellation of SEQ ID NO: 11 moots the objection. This amino acid sequence is "preserved" (i.e., it is a consensus sequence, but is not identically present in all sequences of the family of wheat storage proteins). The sequence QQGYPTS (SEQ ID NO: 41) is present in all proteins of the family. It is additional evidence of the relatedness of the proteins recited in the claims. Table 1 of the specifi-

cation shows the proteins' sequences compared to the consensus sequence on the last line. The sequence PFPQPQLPY (SEQ ID NO: 36) is present in proteins of the family.

Withdrawal of the written description rejection is requested because the specification conveys to a person skilled in the art that Applicant was in possession of the claimed invention as of the filing date.

35 U.S.C. 103 – Nonobviousness

A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. *In re Kahn*, 78 USPQ2d 1329, 1334 (Fed. Cir. 2006) citing *Graham v. John Deere*, 148 USPQ 459 (1966). The *Graham* analysis needs to be made explicitly. *KSR v. Teleflex*, 82 USPQ2d 1385, 1396 (2007). It requires findings of fact and a rational basis for combining the prior art disclosures to produce the claimed invention. See *id.* ("Often, it will be necessary for a court to look to interrelated teachings of multiple patents . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue"). The use of hindsight reasoning is impermissible. See *id.* at 1397 ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning"). Thus, a *prima facie* case of obviousness requires "some rationale, articulation, or reasoned basis to explain why the conclusion of obviousness is correct." *Kahn* at 1335; see *KSR* at 1396. An inquiry is required as to "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.* at 1396. But a claim that is directed to a combination of prior art elements "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* Finally, a determination of *prima facie* obviousness requires a reasonable expectation of success. See *In re Rinehart*, 189 USPQ 143, 148 (C.C.P.A. 1976).

Claims 1 and 4 were rejected under Section 103(a) as allegedly unpatentable over Santong ("The 1Dx5 High Molecular Weight Subunit Gene from Wheat in Trans-

genic Maize” 2001) in view of Schuhmann (U.S. Patent 6,517,874), and further in view of Whitelam (J. Sci. Food Agric. 68:1-9, 1995). Applicant traverses.

The cited documents would not result in the present invention because they fail to teach or make obvious that one of ordinary skill in the art would have known that the good viscoelasticity of dough made from flour of transgenic plants is related to cysteine residues at the terminal regions of HMW glutenins in the flour and this elasticity can be improved by repeating certain glutamine-rich domains. Viscoelasticity of dough (i.e., a mixture comprising water and flour) is critical in its ability to “rise” when gas produced by leavening agent is trapped in alveolar structures. Otherwise, in the prior art, wheat flour is essential for obtaining rising flours. But Applicant’s invention further improves viscoelastic characteristics of the dough from flour of transgenic plants by treatment with transglutaminase.

Further, five lysine residues (K) are conserved among the amino acid sequences of the wheat storage proteins (see positions 3, 44 or 78, 100, 947 or 927/767, and 949). HMW glutenins have a structure similar to what is required by disulfide isomerase for the formation of disulfide bridges in gluten. Applicant discovered the analogous structural requirement for transglutaminase acting on HMW glutenins having conserved lysine residues substituting for conserved cysteine residues in gluten.

Finally, the mutations required by Applicant’s invention can lower allergenicity of the claimed flour. They act on sites that are potentially allergenic in a family of wheat storage proteins expressed in seeds of the transgenic plants. They would not have been obvious in view of the cited documents as appears to be acknowledged by the rejection of claims 1 and 4.

Withdrawal of the Section 103 rejection is requested because the claims would not have been obvious to one of ordinary skill in the art when this invention was made.

Conclusion

Having fully responded to the pending Office Action, Applicant submits that the claims are in condition for allowance and earnestly solicit an early Notice to that effect. The Examiner is invited to contact the undersigned if additional information is required

Respectfully submitted,

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